

Application No. 10/612,309
Docket No. 200309202-1

REMARKS

Claims 1- 14 are pending in the application - claim 1 has been amended by the foregoing amendment.

Applicants appreciate the Examiner's Indication of allowable subject matter in claims 9-11.

In response to an objection to the Abstract for exceeding 150 words, Applicants have enclosed a Substitute Abstract and request entry of same.

Claims 1, 2, 8 and 12-14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Publication No. US 2001/0045957 ("Ulichney", now U.S. Patent No. 6,690,389). Claims 3-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ulichney in view of U.S. Patent No. 6,185,334 ("Cheung et al."). Applicants respectfully request reconsideration and withdrawal of the rejections for the following reasons.

Applicant's invention is directed to a system and method for correcting luminance non-uniformity of an image generated by an output device such as a projector. As recited in claim 1, for example, a system for modifying input image data used by a projector in generating a displayed image, wherein the projector supports number of unique levels, comprises: a luminance uniformity engine configured to process the input image data, based on spatial location of pixels forming said input image data, so as to generate corrected image data that is uniform in luminance; a dither engine configured to process the corrected image data from the luminance uniformity engine so as to generate dithered image data; and a converter configured to convert the dithered image data into the unique levels of the projector.

As highlighted in the Specification (p. 2, lines 14-29 and p. 3, lines 1-19), projectors do not project at a uniform luminance across the entire screen (Figs. 1-3). Applicants'

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invention is directed to correcting this non-uniformity. The luminance varies based on location on a screen such as, for example, portion of the displayed image that is closer to the projector being brighter (p. 3, lines 2-3). Accordingly, the system and method of Applicants' invention processes the input images based on spatial location of pixels (or, pixel addresses x_p and y_p represented by elements 1108a and 1108b in Fig. 11).

The Ulichney publication (now patent) describes a tone correction system using a dithering engine. Tone correction may include, for example, adjusting contrast or brightness of an entire image and is not based on spatial location of individual pixels forming the image. As shown in Fig. 2, Ulichney processes the input image regardless of spatial location.

Furthermore, Ulichney describes and illustrates (Fig. 2) a run time dither system 28 processing input images and outputting the processed images to an output device 30 (projector for example). In Applicants' invention (Fig. 4), the image is received by an interface 402 of projector 400 and processed by the system of Fig. 11.

In claim 8, a method for correcting projector non-uniformity and increasing apparent amplitude resolution, wherein the projector supports a stated number of levels, is recited. The method comprises measuring the projector non-uniformity at a plurality of the stated levels, determining the number of unique levels supported by the projector, utilizing the non-uniformity measurements to generate uniform projector image data and dithering the modified projector image data such that a displayed image appears to have been formed either from the stated number of levels or from a greater number of levels than the stated number.

Ulichney fails to disclose, *inter alia*, measuring projector non-uniformity at a plurality of stated levels. In addition, the portions of Ulichney relied upon for disclosing determining the number of unique levels supported by the projector (i.e. ¶ 0012, lines 1-7) appear to

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describe an input device and not a projector (output device).

At least for these reasons, it is respectfully submitted that independent claims 1 and 8 are allowable over the teachings of Ulichney. The remaining claims (i.e. 2-7 and 9-14) are also allowable as they depend on one of claims 1 and 8.

Cheung is directed to reconstructing a dithered image. Cheung discloses a method and apparatus for inverse dithering an image which has been dithered using any one of a plurality of dithering methods (col. 2, lines 45 to 48). As such, Cheung teaches away from Applicants' invention of correcting luminance non-uniformity of an image. Accordingly, claims 3-7 are allowable over the combined teachings of Ulichney and Cheung as well.

All of the rejections having been overcome, it is respectfully submitted that this application is in condition for allowance and a notice to that effect is earnestly solicited. Should the Examiner have any questions with respect to expediting the prosecution of this application, she is urged to contact the undersigned at the number listed below.

Respectfully submitted,

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